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Case Report

Blunt Abdominal Injury With Isolated Gallbladder Hematoma

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Abstract

Blunt abdominal contusion is common in children, but isolated injury with gallbladder hematoma is rarely observed. Examining children can be difficult because they may not cooperate or understand procedures, and therefore, radiography is helpful for diagnosis. However, there are still limitations in applying radiographic examinations in diagnosing intra-abdominal injuries, especially in children with peritoneal signs or an unstable hemodynamic status. In these circumstances, invasive intervention with laparoscopy should be applied for further evaluation. We report here a 6-year-old girl with blunt abdominal trauma in whom hepatobiliary injury was noted on computed tomography and magnetic resonance imaging. Because the patient was unconscious, had unstable vital signs, and the radiographic study was ambiguous, peritonitis could not be excluded. A laparoscopy was then performed and isolated gallbladder hematoma was diagnosed. The patient was discharged after laparoscopic intervention and orthopedic fixation. (*Tzu Chi Med J* 2009;21(4):323–326)

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1. Introduction

Isolated gallbladder hematoma is very rare as a result of blunt abdominal injury. Although a comprehensive physical examination is the most important tool in the primary survey, it has an accuracy rate of only 50%, even in skilled and experienced hands (1,2). Recently, focused abdominal sonography for trauma (FAST) has been used in the detection of intra-abdominal hemorrhage due to blunt trauma, but a negative FAST

examination has questionable utility as the sole diagnostic test to rule out intra-abdominal injury (3,4). In pediatric patients with hepatobiliary injury, it is more difficult to evaluate and observe a patient's condition. Sometimes, abdominal computed tomography (CT) and magnetic resonance imaging (MRI) may provide more information about a hepatobiliary injury. However, on rare occasions, such as in unconscious patients or patients with unstable vital signs, an isolated gallbladder injury may be difficult to differentiate

from peritonitis, and laparoscopy or laparotomy may be needed to provide a comprehensive evaluation of the condition.

2. Case report

A 6-year-old girl was brought to our emergency department by emergency medical technicians after falling from the fifth floor of her apartment building. There was no significant past medical history, past surgical history, medications, or allergies.

The patient was unconscious on arrival to the emergency department. Her heart rate was 132 beats per minute and her blood pressure was 116/69. Physical examination showed multiple abrasions over the four limbs. There was diffuse abdomen tenderness, which was more severe on the right side than the left. The patient had bowel sounds. Plain radiography did not reveal abnormalities in the cervical spine, but bilateral pneumothorax was seen on chest radiography and a right femoral neck fracture was found on radiography of the pelvis. The patient also had a right pubic bone fracture and a right distal tibial fracture. Hematuria was noted after Foley catheter insertion. Her laboratory data showed the following: white blood cell count was 10,900/mL, hemoglobin was 13.4 g/dL, hematocrit was 41.6%, amylase was 136 U/L, lipase was 365 IU/L, aspartate aminotransferase was 1073 IU/L, and alanine aminotransferase was 800 IU/L.

Because of abdominal tenderness, elevated amylase and lipase levels and mild fluid accumulation in the pelvis on FAST, CT scans of the abdomen and pelvis were obtained, which revealed a bilateral pneumothorax, a right 11th rib fracture with lung contusion, and a suspected hematoma in the left lobe of the liver adjacent to the gallbladder fossa (Fig. 1). There was no free fluid in the peritoneal cavity and no abnormalities were detected in the spleen, adrenals, or

kidneys. A bilateral tube thoracostomy with a 20-Fr chest tube was performed under light, short-action sedation. The patient was febrile and exhibited tachycardia during observation in the intensive care unit with persistent abdominal pain and lethargic consciousness. Physical examination revealed a diffusely tender, distended abdomen. The white blood cell count increased to 12,150/mL. Because of peritoneal signs and unstable vital signs, magnetic resonance cholangiopancreatography was carried out for further evaluation of hepatobiliary injury before surgery to rule out other intra-abdominal lesions. However, liver laceration with hematoma in the left lobe of the liver and traumatic pancreatitis could not be excluded on MRI (Fig. 2). Laparoscopy was considered under suspicion of a hidden lesion causing peritonitis. During the exploration, a hematoma over the peri-gallbladder was found, and no active bleeding was noted. The duodenum was intact. The lesser sac



Fig. 1 — Computed tomography reveals a suspected hematoma (arrow) in the left hepatic lobe adjacent to the gallbladder fossa.

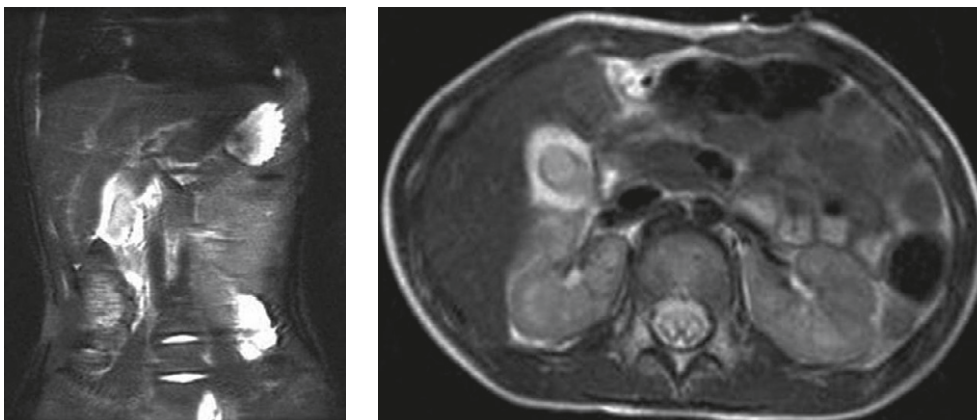


Fig. 2 — Magnetic resonance cholangiopancreatography shows a liver laceration with hematoma in the left hepatic lobe and suspected concentrated bile in the gallbladder.

was explored and was clear, without evidence of pancreatic injury. No liver laceration was found and there was serosanguinous fluid in the pelvis. An isolated gallbladder hematoma without other obvious lesions in the abdomen was diagnosed by laparoscopy. The patient was intubated and taken to the pediatric intensive care unit.

Both chest tubes were removed on day 2 and the patient was transferred to the pediatric ward on day 3. Open reduction of her right leg fractures was performed on day 6, with cannulated screws for the femoral neck and two pins for the distal tibia. The patient was given a liquid diet and advanced to a regular diet on the following day. She was discharged on postoperative day 11. On follow-up, she had no complaints. She ate well and had no problems with bowel movements or abdominal pain in 9 months of follow-up at our outpatient clinic.

3. Discussion

Blunt hepatobiliary tract injury is an uncommon but potentially morbid condition that is difficult to diagnose and manage in the pediatric patient. It is imperative to determine the presence, location, and severity of injuries. Early detection of these life-threatening injuries is the most important factor in decreasing the incidence of death due to intra-abdominal trauma. In pediatric patients, if the injury is limited to the liver or gallbladder, nonoperative management in hemodynamically stable patients is well supported (5–7). Currently, there are many diagnostic methods (CT, FAST, and diagnostic peritoneal lavage) for evaluation of abdominal injuries in traumatized children. Sometimes, however, in spite of these examinations, it is still difficult to evaluate the presence and severity of intra-abdominal injuries in children.

The most challenging problem is the lack of good tools and laboratory data, which can identify the patients who need surgical intervention. The evaluation of peritonitis is especially difficult in children who have no obvious radiological findings but are unconscious or have unstable vital signs.

The diagnosis of a hepatobiliary injury is often difficult in a patient with multiple injuries and demands a high index of suspicion. Worsening abdominal discomfort, distention, nausea, vomiting, persistent ileus, hyperbilirubinemia, and low grade fever are commonly associated with bile duct injury but these are nonspecific symptoms. The first diagnostic test may be abdominal sonography or a CT scan to confirm free fluid, but a concomitant liver injury with hemoperitoneum is often present and gallbladder injury is often not the primary concern. Ultrasonography can be a useful initial diagnostic study of abdominal injury, but is of limited use for initial diagnosis of bile duct

injury (8,9). Although abdominal CT with intravenous and enteral contrast has been the standard for evaluation of the solid organs in the peritoneal cavity with retroperitoneum injury, it is unreliable for the detection of biliary injury (10). MRI was developed to evaluate the hepatobiliary tract, but its role in the emergency department has not been fully assessed because patients must be stable and remain lying down for a period of time. Therefore, although MRI provides high-quality images of the pancreatic duct and biliary tract, which are useful in follow-up studies of hepatobiliary damage and minor ductal injuries (11), the expense and time taken are major drawbacks. Laparoscopy in pediatric trauma is a safe method for the evaluation and treatment of select blunt and penetrating abdominal injuries in hemodynamically stable patients, but it is limited to the retroperitoneal area. Nevertheless, it still offers a good inspection of the liver, gallbladder and other adjacent organs and serves as a diagnostic tool in abdominal trauma, which reduces the morbidity of a negative laparotomy (4).

In our patient, after an abdominal CT scan was performed and hepatobiliary injury with peri-gallbladder hematoma was suspected, the scan could still not rule out associated injuries in the duodenum and pancreas. MRI was performed for further evaluation of the hepatobiliary tract, but it did not find conclusive results of hepatobiliary tract injury. Because we were concerned there might be undiagnosed potential hepatobiliary tract lesions and other associated injuries, laparoscopy was carried out for further evaluation and treatment of intra-abdominal lesions. Fortunately, the liver was not lacerated, and only an isolated gallbladder hematoma without any other obvious lesions in the abdomen was diagnosed by laparoscopy. Contusion injury of the liver was suspected, however, because of abnormal aspartate aminotransferase and alanine aminotransferase levels combined with hemopneumothorax and pelvic bone fracture.

In summary, major trauma and a rare isolated peri-gallbladder hematoma in a child made a conclusive diagnosis by CT and MRI difficult because of abnormal laboratory data and unstable patient condition. A combination of CT, MRI and laparoscopy may be used in select traumatized pediatric patients to provide a comprehensive study in the diagnosis of blunt abdominal contusion with hepatobiliary injuries.

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